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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/765,729 | 01/23/2004 | Danny S. Parker | UCF-449CIP | 2655 |

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| EXAMINER |
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JIANG, CHEN WEN

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| ART UNIT | PAPER NUMBER |
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3744

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/765,729

Applicant(s)

PARKER ET AL.

Examiner

Chen-Wen Jiang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 11-14, 18-35, 37, 38 and 60-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-14, 18-35, 37, 38 and 60-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Claim 9 is objected to because of the following informalities: This claim probably should be depend on the claim 6. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-4,6-9,11-14,18-35,37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (U.S. Patent Number 6,519,966) in view of Jordan (U.S. Patent Number 5,197,854) and further in view of Swartwout (U.S. Patent Number 4,647,801).

Martin Sr. discloses an air conditioning and heat pump system. The system comprises coils 30,40 and fan 20. In operation, in certain aspects, a fan 20; e.g. a 1/15 to 1/2 horsepower fan rotating at 625 to 1125 rpm's and moving 500 to 4000 cfm through the coils. In the Office Action mailed 2/22/2006, the Examiner took the official notice that the PSC motor and twisted

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blades are well known in the prior art and the fan size and blade arrangement are design choice. In regard to the blade twist, Jordan discloses the fan blade is twisted with root end angle of twist is greater than tip end angle of twist (Applicant may compare Fig.1 of Jordan and Fig.33 of Applicant's disclosure). Jordan also discloses that because the fan blades 12 are rotating about a central axis, the blade tip located farthest from the hub 14 will necessarily have a greater linear speed than the blade root located adjacent the hub. To promote smoother airflow through the fan and further reduce turbulence, the fan blades 12 are provided with a twist along their radial length. In regard to the PSC motor, Swartwout discloses PCS motor for the purpose of driving fans for moving air through air-cooled condenser coil, in air conditioning and refrigeration packages. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Martin with a twisted blade in view of Jordan to reduce flow turbulence and PSC motor which is designed for condenser coil cooling.

4. Claims 60,63,66 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin/Jordan/Swartwout applied to the claims 1,6,11 and 24 above, and further in view of Zeng (US 2002/0197162).

Martin/Jordan/Swartwout discloses the invention substantially as claimed. However, Martin/Jordan/Swartwout does not disclose concave leading edge and concave trailing edge. Zeng discloses concave leading edge and concave trailing edge (claim 54) in the same field of endeavor for the purpose of leading and trailing edges' design option. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Martin/Jordan/Swartwout with a concave leading edge and concave trailing edge in view of Zeng to design concave leading edge and concave trailing edge.

5. Claims 61,62,64,65,67,68,70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin/Jordan/Swartwout applied to the claims 1,6,11 and 24 above, and further in view of Stauder et al. (US 2003/0019606).

Martin/Jordan/Swartwout discloses the invention substantially as claimed. However, Martin/Jordan/Swartwout does not disclose convex leading edge and concave trailing edge with angled shaped tip (to form a band). Stauder et al. disclose convex leading edge and concave trailing edge with angled shaped tip in the same field of endeavor for the purpose of leading and trailing edges and tip design option. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Martin/Jordan/Swartwout with a convex leading edge and concave trailing edge with angled tip in view of Stauder et al. to design the blade.

6. Claims 1-4,6-9,11-14,18-35,37,38,61,62,64,65,67,68,70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Houten (U.S. Patent Number 4,971,520) in view of Wills et al. (U.S. Patent Number 5,218,283) or Milewski (U.S. Patent Number 5,236,393) and further in view of Tolbert (U.S. Patent Number 6,172,476).

In regard to claims 1-4,6-9,11-14,18-35,37 and 38, Van Houten discloses a fan for heat exchanger. Referring to Figs.4A and 4B, Van Houten discloses the fan blade is twisted with root end angle of twist (Fig.4A) is greater than tip end angle of twist (Fig.4B). Wills et al./Milewski disclose the fan is driven by PSC motor and Tolbert Jr. et al. disclose it's well known to drive the fan in different speeds, RPM to generate the appropriate CFM by the power of the motor. Also, the required power is based on the inflow velocity, rotation speed and blade shape. It is not patentable, however, to discover the optimum of geometry and rpm of the blade by routine

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experimentation/calculation based on different twist. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), MPEP Section 2144.05(IIA). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Van Houten with a PSC motor in view of Wills et al. or Milewski so as to drive motor with smooth operation.

In regard to claims 61,62,64,65,67,68,70 and 71, Van Houten discloses the blades comprising convex leading, concave trailing edge and sharp angled tip (Figs.2 and 3).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nelson (U.S. Patent Number 4,784,575) and Asselbergs (U.S. Patent Number 4,846,399) disclose convex leading edge and concave trailing edge in the blade design. Fujinaka et al. (U.S. Patent Number 6,254,342) is made of record as prior art with bend blade tip.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chen-Wen Jiang whose telephone number is (571) 272-4809.

The examiner can normally be reached on Monday-Thursday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Chen-Wen Jiang
Primary Examiner

A handwritten signature in black ink, appearing to be 'C-W Jiang', written in a cursive style.